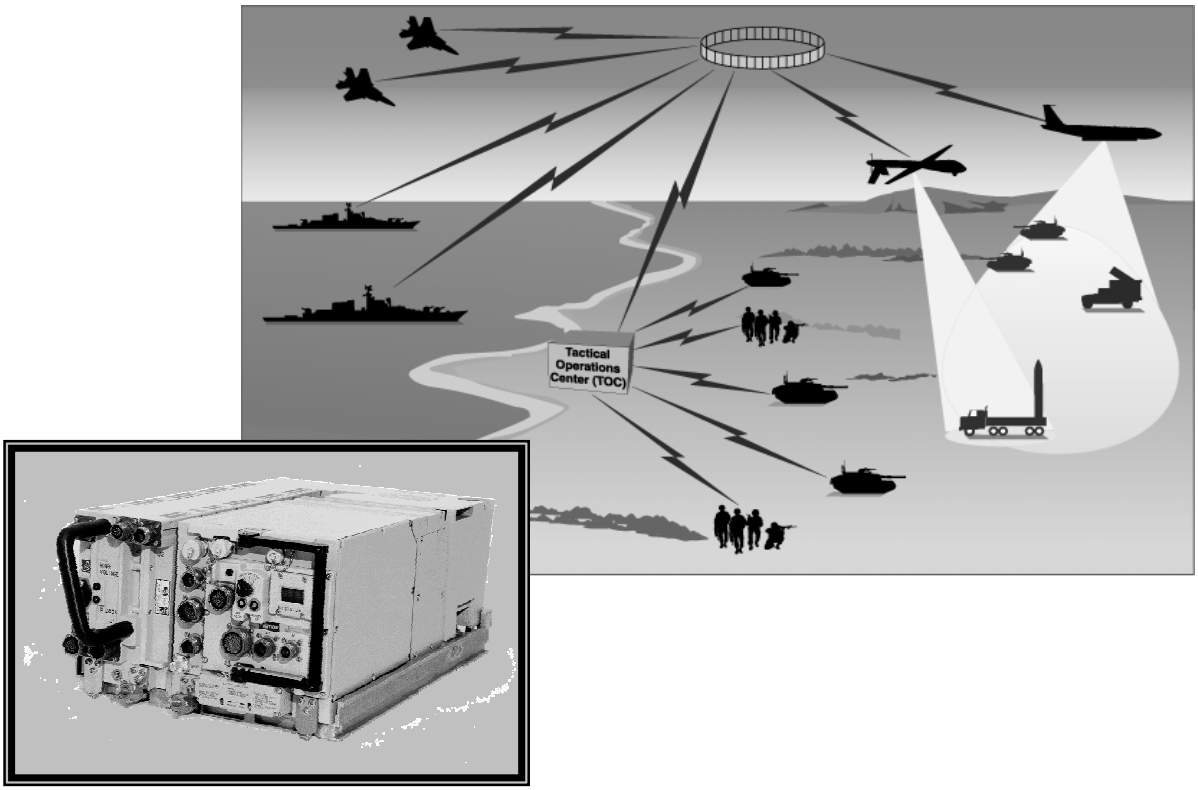
ARMY MULTIFUNCTION INFORMATION DISTRIBUTION SYSTEM (MIDS) LOW VOLUME TERMINAL (2)



Joint ACAT ID Program (Navy Lead)

Total Number of Systems:	165
Total Program Cost (TY$):	$250M
Average Unit Cost (TY$):	$300K
Low Rate Initial Production::	1QFY00
Full-rate production:	3QFY02

Prime Contractor

Design: MIDS Consortium (MIDSCO)
Production: Competitive

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2010

The Army Multifunction Information Distribution System (MIDS) provides Link 16 communications to host platforms. Army MIDS consists of a MIDS-LVT-2 terminal, a MIDS Terminal Controller, a Link-16 antenna, and host platform integration hardware and software. The MIDS-LVT-2 chassis, some internal boards, and some core software are common with the MIDS-LVT terminal. The Army MIDS-LVT-2 has a unique power supply, fan, internal boards, and software to satisfy Army requirements.

The Army MIDS is to provide jam-resistant, near real-time, high digital data throughput communications, position location reporting, navigation, and identification capabilities to host platforms. The Army plans to integrate the MIDS-LVT-2 into PATRIOT battery and above command and control (C2). Additional MIDS integrations will include the Theater High Altitude Area Air Defense (THAAD),

Medium Extended Air Defense System, and Joint Land Attack Cruise Missile Elevated Netted Sensor System in support of Service, Joint, and Coalition theater air and missile defense mission areas.

Army MIDS, integrated into these platforms, supports joint operations through employment of the common Joint and NATO Link-16 TADIL J message set, waveform, and common cryptographic variables. Link-16 communications interoperability contributes to the ***Joint Vision 2010*** operational concept of ***information superiority*** by the rapid exchange of theater information; and ***precision engagement*** through the exchange and comparison of air and ground track location and identification of threats, thus providing force protection through reduction of fratricide.

BACKGROUND INFORMATION

The Army developed the Link-16 capable Joint Tactical Information Distribution System (JTIDS) Class 2M terminal and fielded approximately 100 systems to the Forward Area Air Defense Command and Control, some PATRIOT Battalion C2, and THAAD (for integration engineering). The Army decided to terminate acquisition of the Class 2M and transition Link 16 requirements to MIDS in FY99. The Terminal Controller consists of specialized software hosted on a Pentium chip personal computer that provides network initialization, monitoring functions, and Built-In Test fault detection and isolation.

The Army plans to execute an LRIP buy during 2QFY00 to support IOT&E and host platform integration. A full-rate production decision is planned for 3QFY02.

Planned test and evaluation to support LRIP includes Contractor Development Test and Evaluation, a reliability stress test, Maintenance Demonstration, Multi-Service Operational Test, (MS-OT) and a Limited User Test directed by the Army Test and Evaluation Command during FY99 and 1QFY00. Testing under electronic warfare conditions was deleted from the Limited User Test and will be conducted prior to the LRIP decision. An IOT&E will support full-rate production decision.

TEST & EVALUATION ACTIVITY

A major replanning of Army MIDS test and evaluation activities was accomplished during FY99. It was determined that developmental MIDS-LVT-2 terminals and supporting software would not be sufficiently production representative to complete an adequate operational test as planned during FY99. Consequently, the test structure was redesigned to conduct a Limited User Test using the developmental terminals to reduce the risk for IOT&E and conduct comprehensive IOT&E using the LRIP terminals to support the full-rate production decision.

The Limited User Test conducted in October 1999 deployed a PATRIOT Battalion Information Coordination Center and elements of a PATRIOT Battery, and two Forward Area Air Defense Command and Control systems to Eglin AFB, FL. DOT&E supported the combination of Air Force Fighter Data Link and Army MIDS MS-OT testing with the Limited User Test. The Army and Air Force will share Electronic Warfare, Airborne Warning and Control System, Army Air Defense Artillery, and fighter assets during these tests, providing cost and resource tasking savings and a more realistic operational test scenario.

Contractor Development Test and Evaluation monitored by operational test evaluators, was conducted during 3/4QFY99. Laboratory and factory tests included environmental, common software, Y2K, and electromagnetic interference testing.

TEST & EVALUATION ASSESSMENT

Developmental tests conducted predominantly by the contractor, and preliminary Limited User Test results indicate that the Army MIDS system design is maturing.

FY99 developmental testing and the Contractor Development Test and Evaluation initial results indicated that the terminal failed the acoustic noise test. However, although measurements indicated that the MIDS-LVT-2 failed the test it was 10 dB quieter than the existing Class 2M terminal. A software Functional Qualification Test conducted at the contractor's facility was completed with a majority of the Army MIDS common software rated as satisfactory. The Built-In Test was immature and will be evaluated during the maintenance demonstration scheduled for 1QFY00. The terminal failed temperature tests. Internal cards were redesigned and a retest is scheduled for 4QFY99. The MIDS Terminal Controller was evaluated for Y2K readiness and failed. The software was modified and passed the Y2K evaluation during FY99.

During the Limited User Test in early October 1999, the MIDS-LVT-2 terminals in both the PATRIOT and Forward Area Air Defense Command and Control system appeared to stop processing received messages possibly due to overloading. This condition usually appeared after approximately 30 minutes of participation in the Link-16 network. This condition was not experienced in the Class 2M equipped Forward Area Air Defense Command and Control System. This is a critical deficiency from the test, which is being analyzed by the Army and the contractor.

CONCLUSIONS, RECOMMENDATIONS, LESSONS LEARNED

DOT&E, by virtue of oversight across Service and Joint programs, can help identify opportunities for combining test events and the sharing of resources and lessons learned. DOT&E negotiated the combination of the Air Force and Army Multi-Service Operational Test, electronic warfare, and operational testing. Exchange of information on data link risk areas and resolution is also fostered by insight across many Service communications programs. Knowledge about fielding concerns is underpinned through data collection during exercises such as the All Service Combat Identification Evaluation Team.

Early operational tester involvement has great potential for identification of risks to operational test and fielding. Operational Testers can help system developers who are moving toward increased reliance on contractor DT&E in lieu of government DT&E with a users perspective and with early operational insights. The philosophy of early involvement should be integrated into the acquisition management curriculam.